

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: ZHANG, Caiteng

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EXAMINER: Heincer, L. J.

TITLE: A SOLUTION OF METAL-POLYMER CHELATE(S) AND APPLICATIONS  
THEREOF

Amendment F: CLAIM AMENDMENTS

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73. (previously presented) A solution of solidified metal-polymer chelates comprising:

0.1 -99.87 percent by weight water;

0.01 - 40 percent by weight of a carboxyl acid;

0.01 to 30 percent by weight of hydroxyl functional carbohydrate polymer;

0.01 to 30 percent by weight of a metal salt;

amino compounds; and

trace amounts of biological proteins, wherein the amino compounds, carbohydrate

polymer, metal and proteins form an amino polymer metal protein hybrid, where the metal ion acts as a bridge between the hydroxyl groups of the carbohydrate polymer and the amino compounds.

74. (previously presented) The solution of metal-polymer chelates of Claim 73, the biological proteins being dissolved with an electric potential suitable for the biological protein.

75. (currently amended) The solution of metal-polymer chelates of Claim 73, ~~the carbohydrate polymer having~~ further comprising carbohydrate molecules having at least one nonsaccharide bimolecule of monosaccharide derivatives.

76. (currently amended) The solution of metal-polymer chelates of Claim 73, further comprising:

at least one alkali.

77. (previously presented) The solution of metal-polymer chelates of Claim 73, wherein the metal salts are selected from a group consisting of beryllium, magnesium, calcium, strontium, barium, radium, nickel, chromium, lead, copper, iron, zinc, titanium, manganese, cobalt, silver, gold, platinum, palladium, cadmium, lithium, rubidium, cesium, mercury, tin, zirconium, aluminum, thallium, antimony, bismuth, germanium, gallium, molybdenum, tungsten, yttrium, scandium, rhodium, iridium, technetium, osmium, ruthenium, rhenium, vanadium, and indium.

78. (previously presented) The solution of metal-polymer chelates of Claim 73, wherein the carboxylic acid is selected from a group consisting of monocarboxylic acid, dicarboxylic acid, tricarboxylic acid, acetic acid, L-ascorbate, 2-hydroxybenzoic acid, methanoic acid, propionic acid, propanedioic acid, 2-hydroxypropanoic acid, hydroxybutanedioic acid, butanedioic acid, hexanedioic acid, cis-butendioic acid, trans-butendioic acid, ethanedioic acid, dodecanoic acid, 2,3-dihydrobutanedioic acid, humic acid, nitrified humic acid, fatty acid, opines in a plant, carboxyl

acid fiber, and carboxyl resin.

79. (currently amended) The solution of metal-polymer chelates of Claim 73, further comprising ~~wherein the hydroxyl groups are a hydroxyl-containing compound~~ selected from a group consisting of sucrose, maltose, lactose, trehalose, ~~disaccharide molecules, monosaccharide molecules,~~ chitosan, degraded oils, seaweed cell wall ~~(without adding a metal salt)~~, unhusked rice ~~(without adding a metal salt)~~, cytokinin-O-glucosides, amino group containing polyvinyl alcohol, polyvinyl alcohol, humic acid, nitrified humic acid, peat, hydroxypropylmethyl cellulose, and a mixture of oil and sugar.

80. (currently amended) The solution of metal-polymer chelates of Claim 73, ~~wherein the~~ further comprising bacteria or cells containing biological proteins ~~are~~ selected from a group consisting of a protein enzyme, ~~a bacterium, and a cell~~ and a protein.

81. (previously presented) The solution of metal-polymer chelates of Claim 73, further comprising a silicic acid bearing molecule.

82. (previously presented) The solution of metal-polymer chelates of Claim 73, further comprising:

a clay.

83. (previously presented) The solution of metal-polymer chelates of Claim 73, further comprising a plastic polymer.

84. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used in an oxidation process so as to produce oxygen anions.

85. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used for a condensation having at least one oxidizing condensation.

86. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used in one of a hydroxypropylmethyl cellulose mimic of chitosan and a monosaccharide mimic of glucosamine.

87. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used in the cultivation and purification of the biological protein bearing biological molecules and their metabolites.

88. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used in a metal enzyme biocatalyst.

89. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used in a disinfectant.

90. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used in a biological protein bearing biological molecules culture medium preservation system.

91. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used for dietary treatments and for health care applications.

92. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used for the production of chemical components of a plant.

93. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used for duplication of genes and carriers.

94. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used in a nano filtration system.

95. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the

solution is capable of being used for the production of a nano material.

96. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used for one of the nano inorganic matter, ~~and nano ceramic, and nano plastic and nano textile industries.~~

97. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used in one of the manufacture of biological liquid crystals, ~~and biological semiconductors and biochips.~~

98. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used for biological batteries.

99. (currently amended) The solution of metal-polymer chelates of Claim 73, in which the solution is capable of being used for processing an oil product ~~having at least one solvent liquid.~~

100. (currently amended) The solution of metal-polymer chelates of Claim 73, the metal-polymer chelates mixed with a compound being selected from a group consisting of: polymer bridging agent, inorganic polymer carrier, inorganic and organic bridge polymer, nano inorganic polymer, plant fiber, carboxyl acid fiber, modification having carboxyl acid fiber, carboxyl resin, amino resin, and inorganic matter, ~~polylysine, and aminosilane.~~

101. (previously presented) The solution of metal-polymer chelates of Claim 73, wherein the solution of metal-polymer chelates further comprising a moisture absorbent combined with the metal-polymer chelates.

102. (currently amended) The solution of metal-polymer chelates of Claim 100, the polymer bridging agent ~~being comprising a monosaccharide having linear polymers or polyvinylpyrrolidone.~~

103. (currently amended) The solution of metal-polymer chelates of Claim 100, wherein the



metal-polymer chelates ~~produce~~ is capable of producing at least one substance, the substance being selected from the group consisting of: amino metal compound, an amino metal polymer, an amino nano metal polymer, an amino nano metal compound, a nano metal polymer, a nano metal compound, an amino biological protein bearing biological molecules, and a pure biological protein bearing biological molecules.